EXHIBIT A27

DIFFRACTION VERIFICATIONS

1) M68503-001
2) M68503-002
3) M68503-009
4) M68503-010
5) M68503-014
6) M68503-019
7) M68503-020
8) M68503-023
9) M68503-026
10) M68503-028
11) M68503-042
12) M68503-057
13) M68503-059

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	162.2	5.23

Streaking Observed:　　　　__YES__　　　　　　**Closely spaced dots:** __YES__

Type of amphibole diffraction verified:　　　__Anthophyllite__

MAS Job #:　　　__M68503-001-001__　　　　　　　**Film #:** __NA__

Analyst: __JC__　　　　　　　　　　**Date of Photo:** __10/29/2018__

Date Verified:11/19/18　　　　　　　　　**EDS Verified:** __YES__

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	40	21.20

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: anthophyllite

MAS Job #:   M68503-001-001 diff 2   Film #: NA

Analyst: JC   Date of Photo: 10/29/2018

Date Verified:11/19/18   EDS Verified: YES

Zone Axis Information
d(hk0) =   8.48
d(hkl) =   5.05
Angle =   90.3
ZA =   Near [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	172.2	4.92

Streaking Observed: _____   Closely spaced dots: _____Yes_____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-001-002**   Film #: **NA**

Analyst: **JC**   Date of Photo: **10/23/2018**

Date Verified:11/19/18   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixel\AA)} = \frac{\text{SPACING (\AA)}}{\text{MEASURED DISTANCE (pixels)}}$$

1)	The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	351.1	2.41

Streaking Observed:	__NA__	Closely spaced dots:	__NA__

Type of amphibole diffraction verified:	__Tremolite__

MAS Job #:	__M68503-001-002 DIFF__	Film #: __NA__

Analyst:	__JC__	Date of Photo: __10/23/2018__

Date Verified:	__1/31/2019__	EDS Verified: __YES__

Zone Axis Information

d(hk0) =	8.3
d(hkl) =	2.41
Angle =	111
ZA =	near [11-1]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	173.5	4.89

Streaking Observed: _____   Closely spaced dots: ____YES____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-001-003 DIFF**   Film #: **NA**

Analyst: **JC**   Date of Photo: **10/24/2019**

Date Verified:11/19/18   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)

MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	660.7	1.28

Streaking Observed: _____ **NA** _____   Closely spaced dots: _____ **NA** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-001-003 DIFF**   Film #: **NA**

Analyst: **JC**   Date of Photo: **10/23/2018**

Date Verified: **1/31/2019**   EDS Verified: **YES**

Zone Axis Information

d(hk0) =   8.96
d(hkl) =   1.28
Angle =   95
ZA =   near [301]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	160.1	5.30

Streaking Observed: _____YES_____   Closely spaced dots: ___YES_____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-002-001**   Film #: **NA**

Analyst: **JC**   Date of Photo: **11/7/2018**

Date Verified:11/19/18   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PA1

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	163	5.20

Streaking Observed: __YES__   Closely spaced dots: __YES__

Type of amphibole diffraction verified: __Anthophyllite__

MAS Job #:   __M68503-002-001 Diff 2__   Film #: __NA__

Analyst: __JC__   Date of Photo: __11/7/2018__

Date Verified:11/19/18   EDS Verified: __YES__

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PAT

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
847.9	351.1	2.41

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-002-002**   Film #: **NA**

Analyst: **JC**   Date of Photo: **11/7/2018**

Date Verified:11/19/18   EDS Verified: **YES**

Zone Axis Information

d(hk0) =   4.46
d(hkl) =   2.41
Angle =   90.6
ZA =   [0 2 -3]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
187.6	38	4.94

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-009-001**   **Film #: 310483**

Analyst: JGC   **Date of Photo: 10/22/2018**

Date Verified: **10/25/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
187.6	36	5.21

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   M68503-009-002   Film #: 310497

Analyst: JGC   Date of Photo: 10/23/2018

Date Verified: 10/25/2018   EDS Verified: Yes

Zone Axis Information

d(hk0) =

d(hkl) =

Angle =

ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	35	5.07

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **TREMOLITE**

MAS Job #:   **M68503-010-001**   **Film #: 41307**

Analyst: MM   **Date of Photo: 10/23/2018**

Date Verified: **10/23/2018**   **EDS Verified: YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixel\AA)} = \frac{\text{SPACING (\AA)}}{\text{MEASURED DISTANCE (pixels)}}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **TREMOLITE**

MAS Job #:   M68503-010-002   **Film #:** 41311

Analyst: MM   **Date of Photo:** 10/23/2018

Date Verified: 10/23/2018   **EDS Verified:** YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	35	5.07

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **TREMOLITE**

MAS Job #:   M68503-010-003   Film #: 41314

Analyst: MM   Date of Photo: 10/23/2018

Date Verified: 10/23/2018   EDS Verified: YES

Zone Axis Information

d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	35	5.07

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **TREMOLITE**

MAS Job #:   M68503-010-004   Film #: 41315

Analyst: MM   Date of Photo: 10/24/2018

Date Verified: 10/24/2018   EDS Verified: YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
187.6	36	5.21

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   M68503-014-001   Film #: 310522

Analyst: JGC   Date of Photo: 10/24/2018

Date Verified: 10/25/2018   EDS Verified: Yes

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixel\AA)} = \text{SPACING (\AA)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

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VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
187.6	36.5	5.14

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-014-002**   **Film #: 310543**

Analyst: **JGC**   **Date of Photo: 10/25/2018**

Date Verified: **10/25/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-019-001-DIF1**   Film #: **41322**

Analyst: **MM**   Date of Photo: **10/25/2018**

Date Verified: **10/25/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: ANTHOPHYLLITE

MAS Job #:   M68503-019-001-DIF2   **Film #:** 41344

Analyst: MM   **Date of Photo:** 10/27/2018

Date Verified: 10/27/2018   **EDS Verified:** YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	34	5.43

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-020-001 Diff 1**   Film #: **310563**

Analyst: **JGC**   Date of Photo: **10/26/2018**

Date Verified: **11/19/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\frac{\text{CAMERA CONSTANT (pixel\AA)}}{\text{MEASURED DISTANCE (pixels)}} = \text{SPACING (\AA)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	34	5.43

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-020-001 Diff 2**   Film #: **310637**

Analyst: **JCG**   Date of Photo: **10/30/2018**

Date Verified: **11/19/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	35	5.27

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-020-002**   Film #: **310574**

Analyst: **JGC**   Date of Photo: **10/26/2018**

Date Verified: **11/19/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	36.5	5.06

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-020-003 Diff 1**   Film #: **310649**

Analyst: **JGC**   Date of Photo: **10/30/2018**

Date Verified: **11/19/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

<u>VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS</u>

<u>CAMERA CONSTANT (pixelÅ)</u> = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	34	5.43

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: <u>Anthophyllite</u>

MAS Job #:   <u>M68503-020-003 Diff 2</u>   Film #: <u>310650</u>

Analyst: <u>JGC</u>   Date of Photo: <u>10/30/2018</u>

Date Verified: <u>11/19/2018</u>   EDS Verified: <u>Yes</u>

<u>Zone Axis Information</u>
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = **SPACING (Å)**
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	36.5	5.06

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-020-004 Diff 1**   Film #: **310654**

Analyst: **JGC**   Date of Photo: **10/30/2018**

Date Verified: **11/19/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
184.6	36	5.13

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Anthophyllite**

MAS Job #:   **M68503-020-004 Diff 2**   **Film #: 310655**

Analyst: JGC   **Date of Photo: 10/30/2018**

Date Verified: 11/19/2018   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   M68503-023-001-DIF1   Film #: 41349

Analyst: MM   Date of Photo: 10/27/2018

Date Verified: 10/27/2018   EDS Verified: YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-023-001-DIF2**   Film #: **41350**

Analyst: **MM**   Date of Photo: **10/27/2018**

Date Verified: **10/27/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-001**   Film #: **2 4680**

Analyst: **AK**   Date of Photo: **10/23/2018**

Date Verified: **10/23/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.22
d(hkl) =   1.74
Angle =   85
ZA =   [301]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-002**   Film #: **2 4683**

Analyst: **AK**   Date of Photo: **10/23/2018**

Date Verified: **10/23/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.05
d(hkl) =   1.6
Angle =   84.3
ZA =   [30-1]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-003**   Film #: **2 4689**

Analyst: **AK**   Date of Photo: **10/23/2018**

Date Verified: **10/23/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   8.49
d(hkl) =   5.12
Angle =   77.6
ZA =   [110]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	100.5	5.19

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-004**   Film #: **2 4690**

Analyst: **AK**   Date of Photo: **10/23/2018**

Date Verified: **10/23/2018**   EDS Verified: **Yes**

Zone Axis Information

d(hk0) =   NA

d(hkl) =   NA

Angle =   NA

ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-005**   Film #: **2 4694**

Analyst: **AK**   Date of Photo: **10/23/2018**

Date Verified: **10/23/2018**   EDS Verified: **Yes**

Zone Axis Information

d(hk0) =   9.14
d(hkl) =   4.87
Angle =   74.2
ZA =   [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\frac{\text{CAMERA CONSTANT (pixelÅ)}}{\text{MEASURED DISTANCE (pixels)}} = \text{SPACING (Å)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	300	1.74

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: <u>Tremolite</u>

MAS Job #:   <u>M68503-026-006</u>   **Film #:** <u>2 4697</u>

Analyst: <u>AK</u>   **Date of Photo:** <u>10/23/2018</u>

Date Verified: <u>10/23/2018</u>   **EDS Verified:** <u>Yes</u>

Zone Axis Information
d(hk0) =   9.16
d(hkl) =   1.74
Angle =
ZA =   [301]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	107	4.87

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-007**   **Film #: 2 4701**

Analyst: **AK**   **Date of Photo: 10/24/2018**

Date Verified: **10/24/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =   9.13
d(hkl) =   4.87
Angle =   74.6
ZA =   [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	106.25	4.91

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-008**   Film #: **2 4708**

Analyst: **AK**   Date of Photo: **10/24/2018**

Date Verified: **10/24/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   8.43
d(hkl) =   4.91
Angle =   84.9
ZA =   [1-12]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	108.75	4.79

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-009**   Film #: **2 4713**

Analyst: **AK**   Date of Photo: **10/24/2018**

Date Verified: **10/24/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.18
d(hkl) =   4.8
Angle =   76.4
ZA =   [101]

<u>VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS</u>

<u>CAMERA CONSTANT (pixelÅ)</u> = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: <u>Tremolite</u>

MAS Job #:   <u>M68503-026-010</u>   Film #: <u>2 4715</u>

Analyst: <u>AK</u>   Date of Photo: <u>10/24/2018</u>

Date Verified: <u>10/24/20118</u>   EDS Verified: <u>Yes</u>

<u>Zone Axis Information</u>
d(hk0) =   8.43
d(hkl) =   4.9
Angle =   69.2
ZA =   [1-10]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\frac{\text{CAMERA CONSTANT (pixel\AA)}}{\text{MEASURED DISTANCE (pixels)}} = \text{SPACING (\AA)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-011**   **Film #: 2 4718**

Analyst: AK   **Date of Photo: 10/24/2018**

Date Verified: **10/24/2018**   **EDS Verified: Yes**

Zone Axis Information

d(hk0) =   8.39
d(hkl) =   1.73
Angle =   87
ZA =   [3-32]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-012**   Film #: **2 4722**

Analyst: **AK**   Date of Photo: **10/24/2018**

Date Verified: **10/24/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.06
d(hkl) =   4.9
Angle =   75.3
ZA =   [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	58.2	8.96

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-013**   Film #: **2 4727**

Analyst: **AK**   Date of Photo: **10/25/2018**

Date Verified: **10/25/2018**   EDS Verified: **Yes**

Zone Axis Information

d(hk0) =   8.96
d(hkl) =   2.59
Angle =   81.2
ZA =   [201]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	102.6	5.08

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-014**   Film #: **2 4729**

Analyst: **AK**   Date of Photo: **10/25/2018**

Date Verified: **10/25/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.08
d(hkl) =   5.08
Angle =   89.5
ZA =   [100]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-015**   Film #: **2 4731**

Analyst: **AK**   Date of Photo: **10/25/2018**

Date Verified: **10/25/20118**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.13
d(hkl) =   5.15
Angle =   90
ZA =   [100]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\frac{\text{CAMERA CONSTANT (pixelÅ)}}{\text{MEASURED DISTANCE (pixels)}} = \text{SPACING (Å)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-016**   Film #: **2 4734**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.13
d(hkl) =   2.6
Angle =   82.5
ZA =   [201]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	107.5	4.85

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-017**   Film #: **2 4740**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.06
d(hkl) =   4.85
Angle =   75.8
ZA =   [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	106	4.92

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-018**   Film #: **2 4744**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   NA
d(hkl) =   NA
Angle =   NA
ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	102	5.11

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-019**   Film #: **2 4752**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   NA
d(hkl) =   NA
Angle =   NA
ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-20**   Film #: **2 4759**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.08
d(hkl) =   2.61
Angle =   82
ZA =   [201]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixel\AA)}} = \text{SPACING (\AA)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	106.3	4.90

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: <u>Tremolite</u>

MAS Job #:   <u>M68503-026-021</u>   **Film #:** <u>2 4764</u>

Analyst: <u>AK</u>   **Date of Photo:** <u>10/26/2018</u>

Date Verified: <u>10/26/2018</u>   **EDS Verified:** <u>Yes</u>

Zone Axis Information
d(hk0) =   NA
d(hkl) =   NA
Angle =   NA
ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	104.3	5.00

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-022**   Film #: **2 4767**

Analyst: **AK**   Date of Photo: **10/26/2018**

Date Verified: **10/26/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.13
d(hkl) =   5
Angle =   89
ZA =   [100]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	102.7	5.07

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-023**   **Film #: 2 4771**

Analyst: AK   **Date of Photo: 10/27/2018**

Date Verified: **10/27/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =   9.14
d(hkl) =   5.07
Angle =   88.6
ZA =   [100]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-024**   Film #: **2 4848**

Analyst: **AK**   Date of Photo: **10/30/2018**

Date Verified: **10/30/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.22
d(hkl) =   2.24
Angle =   84.8
ZA =   [203]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	102.8	5.07

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-025**   **Film #: 2 4783**

Analyst: AK   **Date of Photo: 10/27/2018**

Date Verified: **10/27/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =   NA
d(hkl) =   NA
Angle =   NA
ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\frac{\text{CAMERA CONSTANT (pixel\AA)}}{\text{MEASURED DISTANCE (pixels)}} = \text{SPACING (\AA)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-026**   Film #: **2 4786**

Analyst: **AK**   Date of Photo: **10/27/2018**

Date Verified: **10/27/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.21
d(hkl) =   3.98
Angle =   78.2
ZA =   [10-1]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{CAMERA\ CONSTANT\ (pixel\text{\AA})} = SPACING\ (\text{\AA})$$
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-027**   Film #: **2 4832**

Analyst: **AK**   Date of Photo: **10/30/2018**

Date Verified: **10/30/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.18
d(hkl) =   1.75
Angle =   90
ZA =   [302]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	213.5	2.44

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-028**   Film #: **2 4837**

Analyst: **AK**   Date of Photo: **10/30/2018**

Date Verified: **10/30/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   8.43
d(hkl) =   2.52
Angle =   89.1
ZA =   [111]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	304	1.71

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-029**   Film #: **2 4838**

Analyst: **AK**   Date of Photo: **10/30/2018**

Date Verified: **10/30/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.22
d(hkl) =   1.71
Angle =   84.6
ZA =   [301]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \frac{\text{SPACING (Å)}}{\text{MEASURED DISTANCE (pixels)}}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	106	4.92

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-030**   **Film #: 2 4840**

Analyst: AK   **Date of Photo: 10/30/2018**

Date Verified: **10/30/2018**   **EDS Verified: Yes**

Zone Axis Information
d(hk0) =   NA
d(hkl) =   NA
Angle =   NA
ZA =   NA

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
521.2	See ZA Information	#VALUE!

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **Tremolite**

MAS Job #:   **M68503-026-031**   Film #: **2 4844**

Analyst: **AK**   Date of Photo: **10/30/2018**

Date Verified: **10/30/2018**   EDS Verified: **Yes**

Zone Axis Information
d(hk0) =   9.18
d(hkl) =   4.85
Angle =   76
ZA =   [101]

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   <u>M68503-028-001-DIF1</u>   Film #: <u>41389</u>

Analyst: <u>MM</u>   Date of Photo: <u>10/31/2018</u>

Date Verified: <u>10/31/2018</u>   EDS Verified: <u>YES</u>

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-028-001-DIF2**   Film #: **41391**

Analyst: **MM**   Date of Photo: **10/31/2018**

Date Verified: **10/31/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixel\AA)}} = \text{SPACING (\AA)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-028-002-DIF1**   Film #: **41392**

Analyst: **MM**   Date of Photo: **10/31/2018**

Date Verified: **10/31/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

<u>CAMERA CONSTANT (pixelÅ)</u> = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: <u>ANTHOPHYLLITE</u>

MAS Job #:   <u>M68503-028-002-DIF2</u>   Film #: <u>41393</u>

Analyst: <u>MM</u>   Date of Photo: <u>10/31/2018</u>

Date Verified: <u>10/31/2018</u>   EDS Verified: <u>YES</u>

Zone Axis Information

d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   M68503-028-003-DIF1   Film #: 41396

Analyst: MM   Date of Photo: 10/31/2018

Date Verified: 10/31/2018   EDS Verified: YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixelÅ)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-028-003-DIF2**   Film #: **41398**

Analyst: **MM**   Date of Photo: **10/31/2018**

Date Verified: **10/31/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-001-DIF1**   Film #: **41402**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixel\AA)} = \text{SPACING (\AA)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-001-DIF2**   Film #: **41403**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-002-DIF1**   **Film #: 41405**

Analyst: MM   **Date of Photo: 11/1/2018**

Date Verified: **11/1/2018**   **EDS Verified: YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-002-DIF2**   Film #: **41406**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) ↘ The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-003-DIF1**   Film #: **177.5**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\text{CAMERA CONSTANT (pixelÅ)} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-003-DIF2**   Film #: **41409**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-004-DIF1**   Film #: **41411**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-042-004-DIF2**   Film #: **41412**

Analyst: **MM**   Date of Photo: **11/1/2018**

Date Verified: **11/1/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	35	5.07

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **TREMOLITE**

MAS Job #:   **M68503-057-001**   Film #: **41358**

Analyst: **MM**   Date of Photo: **10/29/2018**

Date Verified: **10/29/2018**   EDS Verified: **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1)   The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   M68503-059-001-DIF1   Film #: 41387

Analyst: MM   Date of Photo: 10/30/2018

Date Verified: 10/30/2018   EDS Verified: YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	33	5.38

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-059-001-DIF2**   **Film #:** **41366**

Analyst: **MM**   **Date of Photo:** **10/30/2018**

Date Verified: **10/30/2018**   **EDS Verified:** **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

$$\underline{\text{CAMERA CONSTANT (pixel Å)}} = \text{SPACING (Å)}$$
$$\text{MEASURED DISTANCE (pixels)}$$

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spancing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixel Å)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   **Closely spaced dots:** _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   **M68503-059-002-DIF1**   **Film #:** **41371**

Analyst: **MM**   **Date of Photo:** **10/30/2018**

Date Verified: **10/30/2018**   **EDS Verified:** **YES**

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =

VERIFICATION OF ZERO DEGREE AMPHIBOLE DIFFRACTION PATTERNS

CAMERA CONSTANT (pixelÅ) = SPACING (Å)
MEASURED DISTANCE (pixels)

1) The calculated spacings should be within +/- 5% of the 001 d-spacing (interrow spacing). The acceptable range for all of the amphiboles is given in the chart below. The page number is given to locate the file card in the Mineral Powder Diffraction File Data book for each type of amphibole and the interrow spacing is given for each amphibole.

Amphibole Type	Pg. #	Card #	Calculated Spacing (Å)	Range +/- 5%
Grunerite	449	31-631	5.2	4.94 - 5.46
Actinolite	4	25-157	5.13	4.87 - 5.39
Tremolite	1192	13-437	5.09	4.84 - 5.34
Crocidolite	993	19-1061	5.19	4.93 - 5.45
Anthophyllite	48	9-455	5.28	5.02 - 5.54

VERIFICATION OF AMPHIBOLE DIFFRACTION PATTERN AT ZERO TILT

Camera K (pixelÅ)	Meas. Distance (pixels)	Calculate Spacing (Å)
177.5	34	5.22

Streaking Observed: _____   Closely spaced dots: _____

Type of amphibole diffraction verified: **ANTHOPHYLLITE**

MAS Job #:   M68503-059-002-DIF2   Film #: 41372

Analyst: MM   Date of Photo: 10/30/2018

Date Verified: 10/30/2018   EDS Verified: YES

Zone Axis Information
d(hk0) =
d(hkl) =
Angle =
ZA =